Fighting the bite with GIS & SharePoint

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ND GIS Users Conference, September 2015

CASS COUNTY GOVERNMENT

Agenda

- Business problem
- Vector Control Overview & history
- Challenges
- Solution development; GIS & SharePoint
- Summary

Business Problem & Challenges

Seasonal staff in Cass County vector control need a mobile solution to view and record treatment of mosquito breeding sites in Cass County & City of Moorhead.

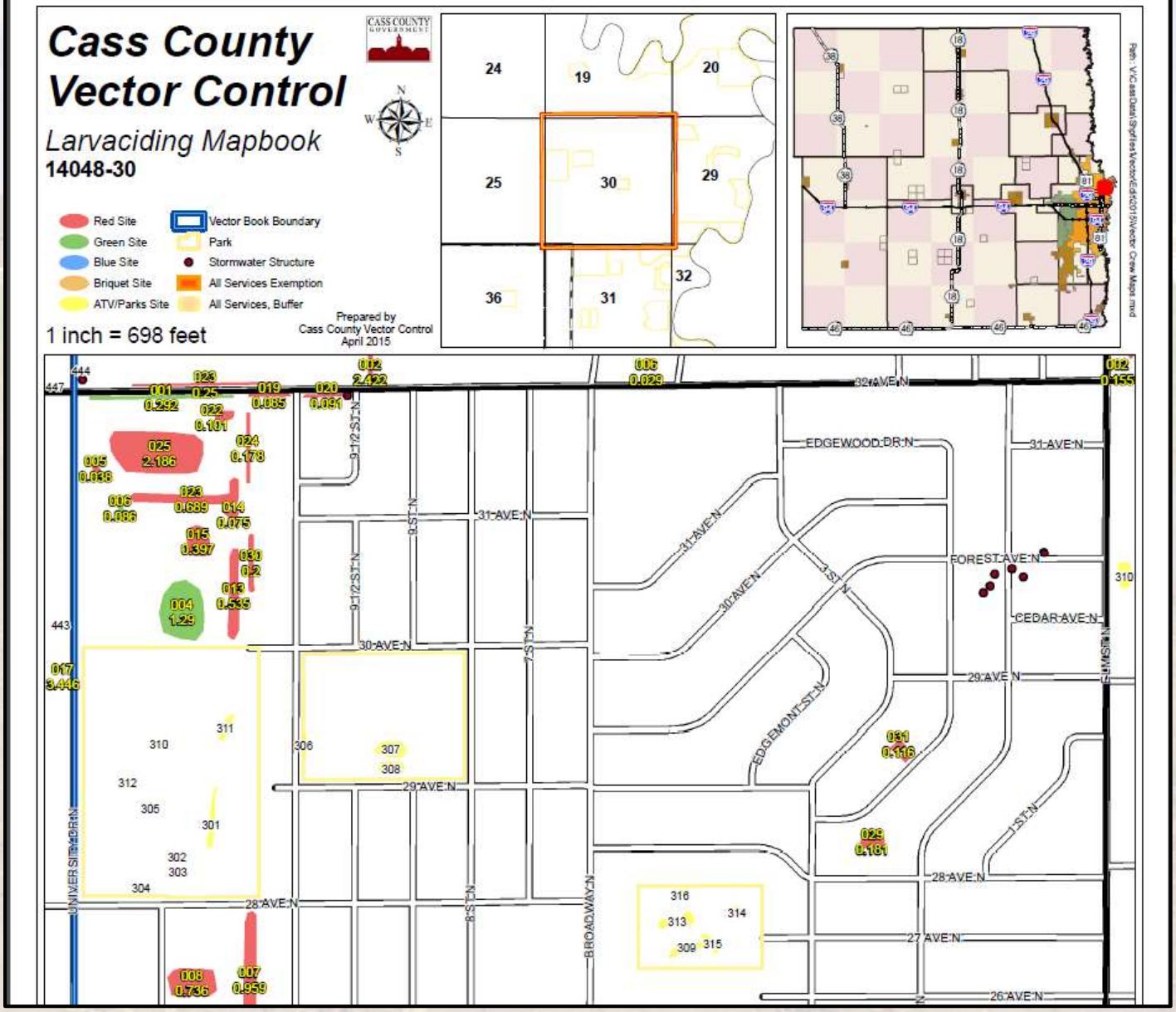
- Full time staff of 3 that swells to 35+ in summer months.
- Seasonal staff – application needs to be fast to roll out and easy to use.
- Mobile and lightweight.
- Available on multiple devices .
- Cost.
- Cell Coverage in Cass County.

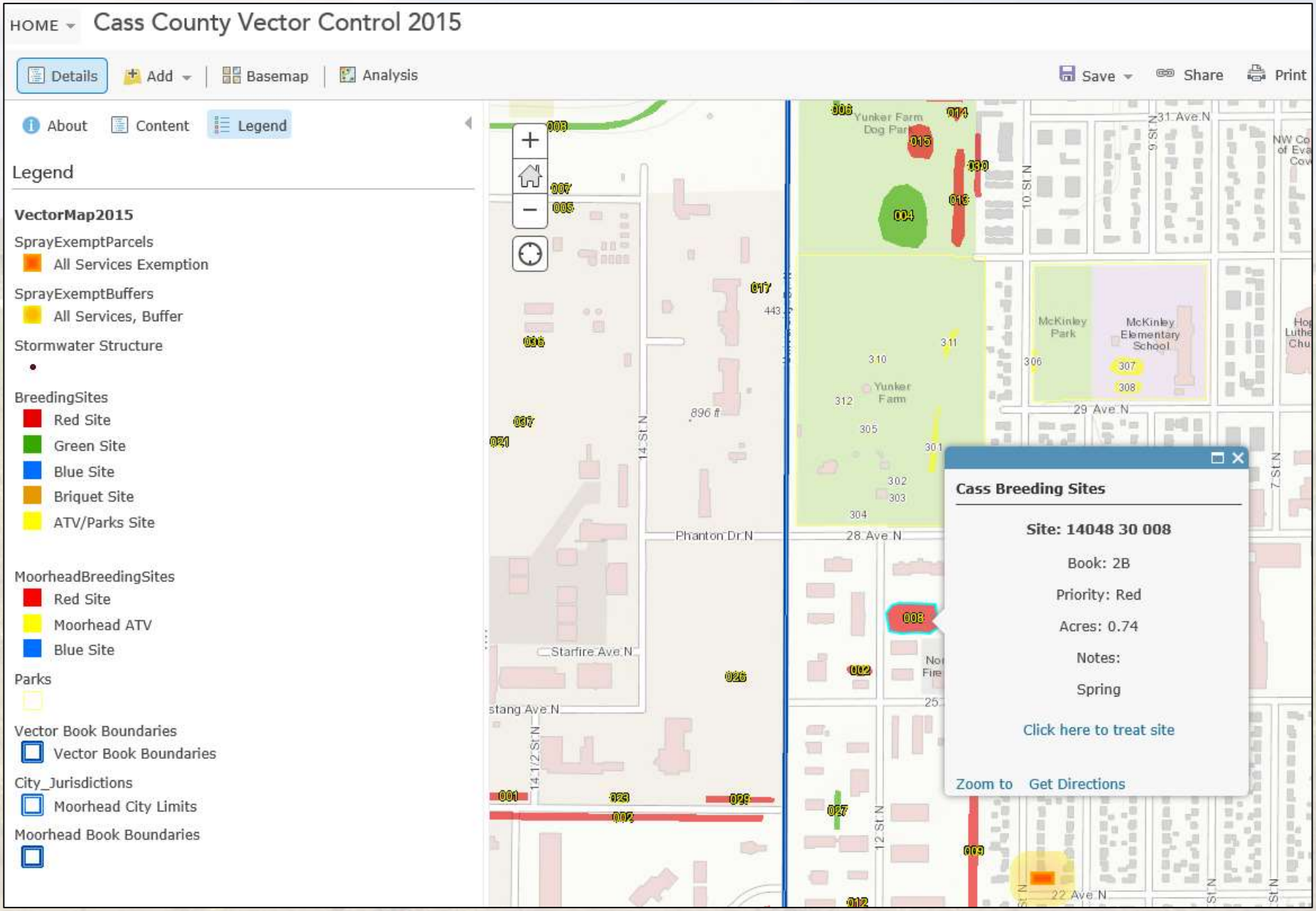
Vector Control

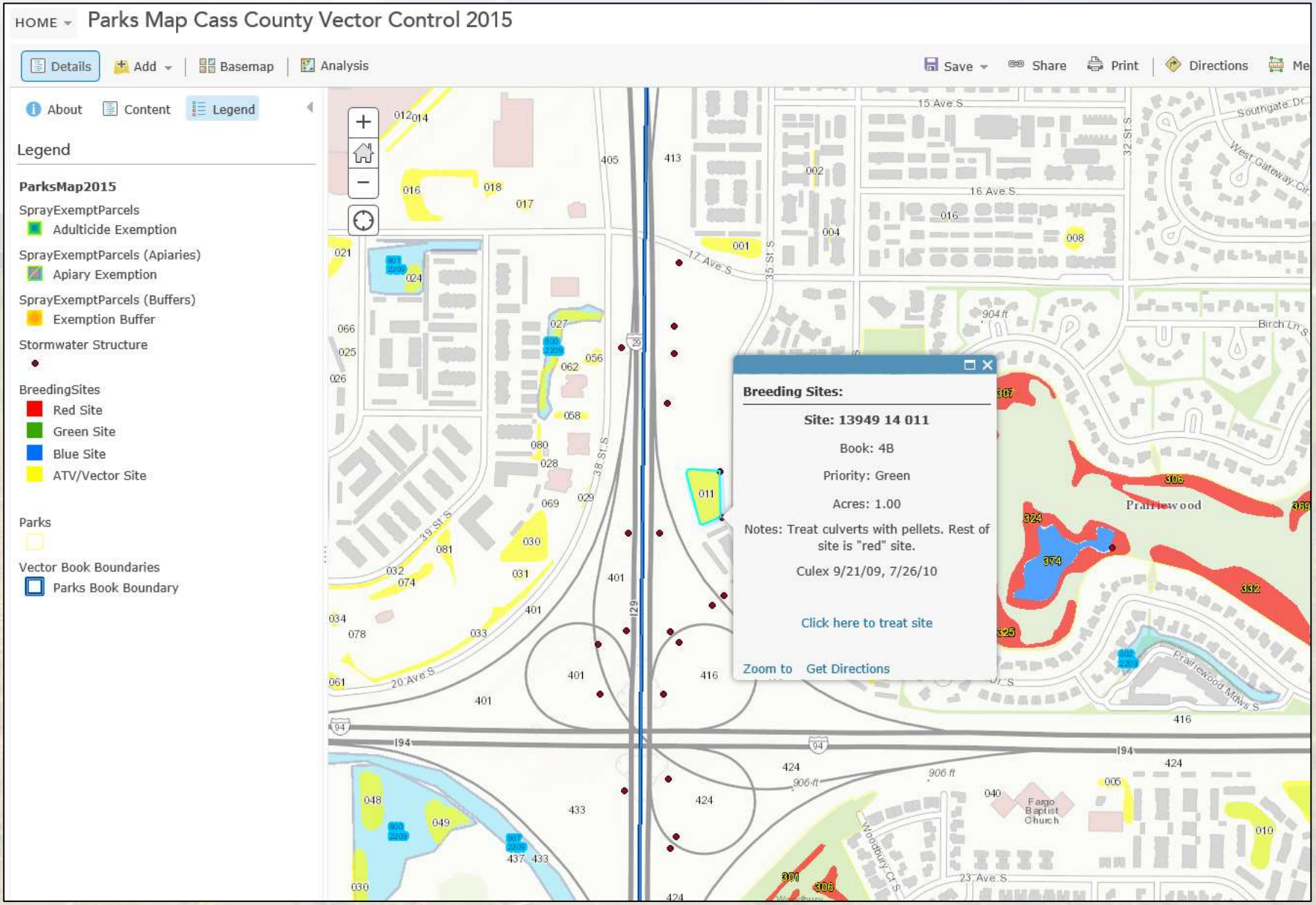
- Historically mapped mosquito breeding and treatment site on paper records & maps.
- Started using GIS in 2003 to document breeding sites
- Polygons developed for breeding sites, harborage sites, parks, traps, refused access, etc.
- 2009 - Additional fields/columns integrated for treatment prioritization, instructions, various other data and metadata
- 2010 - Exported Map data to Access to eliminate hand notation.
- 2012 - Sharepoint Custom List + InfoPath forms launched. Submit, update, and maintain treatment records.
  - ArcGis Explorer AP for WP for map display
- 2013 – ArcGIS Explorer App for Windows Phone + Query String URL Filter (QSF).

Project Development

- During the winter season, vector control create MXDs for all breeding & park sites.
- Paper map books printed for reference.
- MXDs copied to web server and published as map services.
- New maps(s) created in ArcGIS Online using the published map services & ESRI's topographic map as basemap.
- Create pop-ups for breeding sites and enable the hyperlink to treatment records.
- Publish web maps as public.


Cass County
Vector Control
Larvaciding Mapbook
14048-30
Red Site
Green Site
Blue Site
Briquet Site
ATV/Parks Site
Vector Book Boundary
Park
Stormwater Structure
All Services Exemption
All Services, Buffer
1 inch = 698 feet
Prepared by
Cass County Vector Control
April 2015
24
19
20
25
30
29
36
31
32
32nd AVE N
31st AVE N
30th AVE N
29th AVE N
28th AVE N
27 AVE N
26th AVE N
EDGEWOOD DR N
FOREST AVE N
CEDAR AVE N
9 1/2 ST N
9 ST N
8 ST N
7 ST N
1 ST N
EDGEMONT ST N
BROADWAY N
UNIVERSITY DR N


HOME
Cass County Vector Control 2015
Details
Add
Basemap
Analysis
Save
Share
Print
About
Content
Legend
Legend
VectorMap2015
SprayExemptParcels
All Services Exemption
SprayExemptBuffers
All Services, Buffer
Stormwater Structure
BreedingSites
Red Site
Green Site
Blue Site
Briquet Site
ATV/Parks Site
MoorheadBreedingSites
Red Site
Moorhead ATV
Blue Site
Parks
Vector Book Boundaries
Vector Book Boundaries
City_Jurisdictions
Moorhead City Limits
Moorhead Book Boundaries
Yunker Farm Dog Park
McKinley Park
McKinley Elementary School
Yunker Farm
Phanton Dr N
28 Ave N
29 Ave N
31 Ave N
22 Ave N
14 St N
10 St N
9 St N
7 St N
12 St N
Starfire Ave N
Cass Breeding Sites
Site: 14048 30 008
Book: 2B
Priority: Red
Acres: 0.74
Notes:
Spring
Click here to treat site
Zoom to
Get Directions


HOME
Parks Map Cass County Vector Control 2015
Details
Add
Basemap
Analysis
Save
Share
Print
Directions
About
Content
Legend
Legend
ParksMap2015
SprayExemptParcels
Adulticide Exemption
SprayExemptParcels (Apiaries)
Apiary Exemption
SprayExemptParcels (Buffers)
Exemption Buffer
Stormwater Structure
BreedingSites
Red Site
Green Site
Blue Site
ATV/Vector Site
Parks
Vector Book Boundaries
Parks Book Boundary
Breeding Sites:
Site: 13949 14 011
Book: 4B
Priority: Green
Acres: 1.00
Notes: Treat culverts with pellets. Rest of site is "red" site.
Culex 9/21/09, 7/26/10
Click here to treat site
Zoom to
Get Directions
15 Ave S
16 Ave S
17 Ave S
20 Ave S
23 Ave S
32 St S
35 St S
38 St S
39 St S
Southgate Dr
West Gateway Cir
Birch Ln S
Prairiewood
Prairiewood Mews S
Woodbury Ct S
Fargo Baptist Church
I94
I29
904 ft
906 ft

Demo

Custom Attribute Display

Site: {TWP} {SEC_NO} {SITE_NO}

Book: {Book_}

Priority: {Priority}

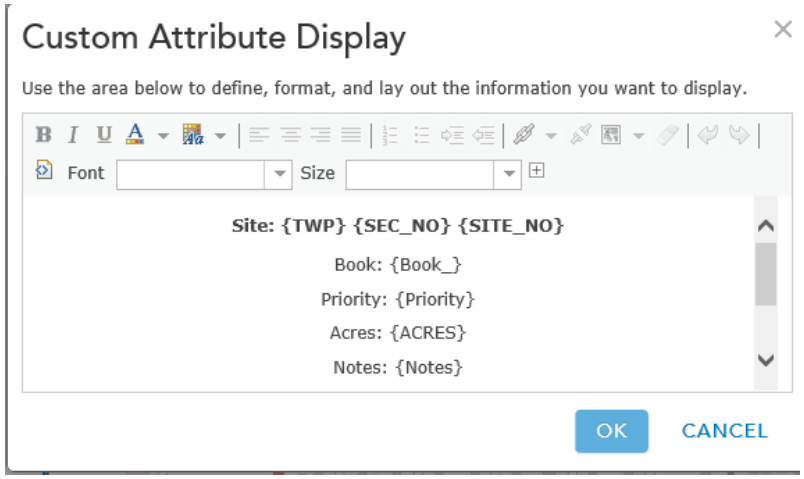
Acres: {ACRES}

Notes: {Notes}

{Culex} {Culex_Tag}

{SpringSite}

[Click here to treat site]



Why is this useful?

- Data Collection
  - State and Fed law require pesticide applications done by govt entities be recorded
  - Data: wind speed and direction, air temp, **location, & area applied**
  - Historically Cass Vector has utilized TWPRNG SEC and Sites # to provide geospatial info on places to kill stuff for employees
  - This allows FT staff to curate specific site by site instructions on how to proceed killing stuff- what products to use, which conditions favor mosq. development at that site etc.

How is this miserable?

There are many sites in many sections in many TWPRNGS

-it gets confusing fast

We do approximately 20-30k site inspections annually- keying 100+ sites per day per user at the high points

-it can get time consuming and take away from the end goal: kill stuff

We must be creative in our User interfaces and I/O

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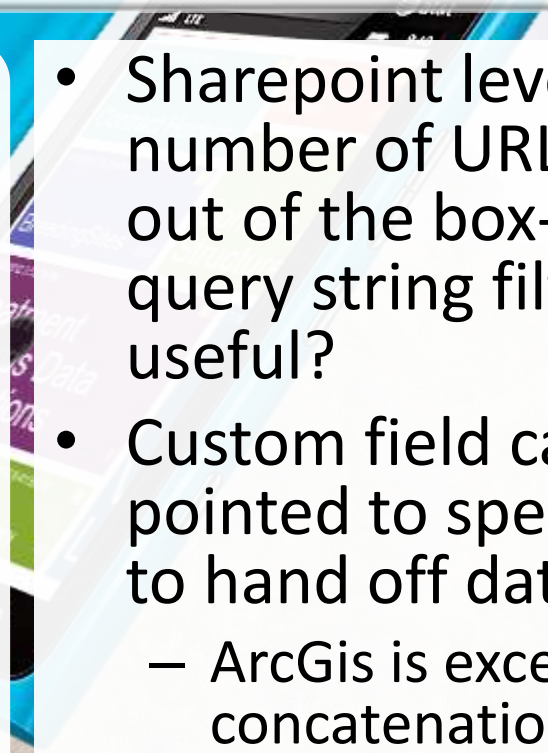
OBLIGATED TO USE WINDOWS 100% OF THE TIME

We must be creative in our User interfaces and I/O

Creative user interfaces- helpful but not perfect

- Tricks used in the past:
  - Drop downs
    - Avoid typing in static recurring codes
  - Dynamic filtering TWP
    - Selection of a City pushes only relevant selection of TWPRNG
    - Still have to select one of approx. 100 “cities”
  - Dropdowns for section 1-36 & 99 options.
    - Still need site number, acres filled etc in.

Not saving a ton of time- and lots of frustration for the end-users, lots of WP7 keystrokes



- Sharepoint leverages a number of URL tricks out of the box- could a query string filter be useful?
- Custom field calc pointed to specific URL to hand off data
  - ArcGis is excellent at concatenation- plus we already use the maps via the mobile app

Formula for URL:

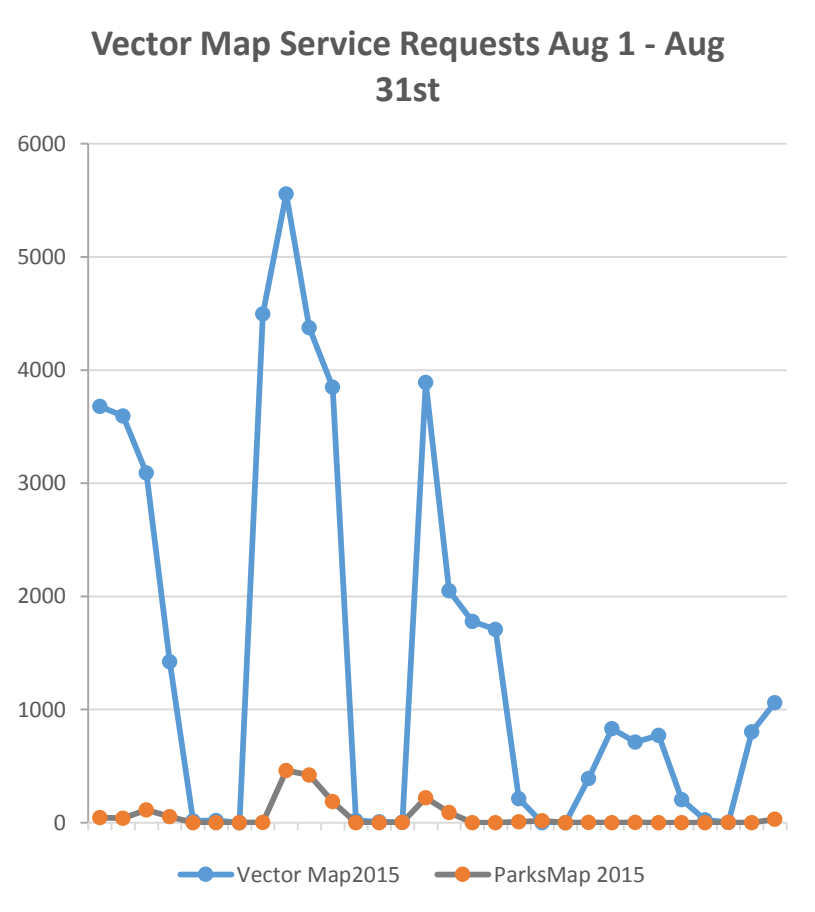
- https://vector2.casscountynd.gov/SitePages/InspRec.aspx?qs1=" & [Jrsdiction] & "|" & [TWP] & "[" & [SEC_NO] & "}" & [SITE_NO] & "!" & Round([ACRES],3) & "/" & [Book_]

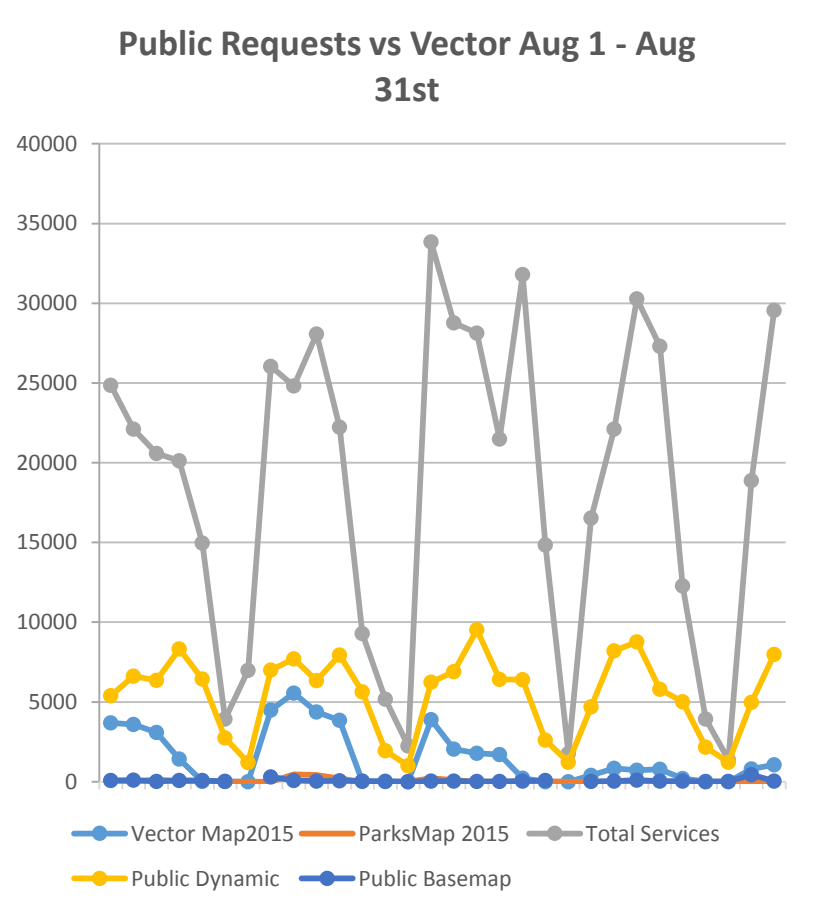
- A text field is created using the Field Calculator using special characters between each field to delineate
- A main “receiver” field then pulls all the information and distributes data to the correct location using the special characters as breaks
- Several selections are eliminated along with at least six keystrokes
- Input accuracy is also improved= Less corrections

Statistics

Feature Class	Total Number	Acres
Cass		
Breeding Sites	4882	14,310
Breeding Sites (Parks)	774	14,312
City	146	1,390
County ATV	174	980
Permanent Water	218	2,445
Permanent Water (Parks)	250	67
Moorhead breeding sites	508	765
Map book boundaries	32	
Spray exempt parcels	117	6159

Usage


Vector Map Service Requests Aug 1 - Aug 31st
6000
5000
4000
3000
2000
1000
0
Vector Map2015
ParksMap 2015


Public Requests vs Vector Aug 1 - Aug 31st
40000
35000
30000
25000
20000
15000
10000
5000
0
Vector Map2015
ParksMap 2015
Total Services
Public Dynamic
Public Basemap

Summary & Future goals

- Technology has been embraced by vector staff.
- On one single day in July (21st) 811 of 986 inspections (82%) used the map to complete their site treatment information.
- Increase coverage of Moorhead sites.
- Utilize Collector for Windows when it's released.
- Unified Public and Internal Access to data – one system for residents to check their area and for staff to visit as necessary.

Other useful ways to build “filters” or variables in:

- Create map links to send you to a group of related documents
  - This is useful for internal project histories and allows more ease of use by the end users.
  - Also useful on the public site- simply set up a website that is pointed to by the map link> instant geospatial project reporting for construction.

Questions?